

## WHAT IS CLAIMED IS:

1. A fastener assembly, comprising:
  - a) a nut having a torque transmitter;
  - b) the torque transmitter is shaped to transmit torque; and
  - 5 c) a cap that is shaped according to the nut, wherein the cap is retained on the nut so that an interference fit is achieved between the cap and the nut.
- 10 2. A fastener assembly according to claim 1, wherein the cap is configured to cooperate with a wrench.
3. A fastener assembly according to claim 1, wherein the cap is shaped to fit within a wrench.
- 15 4. A fastener assembly according to claim 1, wherein the cap is shaped so that a wrench applies torque to the torque transmitter.
5. A fastener assembly, comprising:
  - a) a nut and a washer rotatable relative to each other about a
  - 20 common axis;
  - b) an annular surface on the nut and a bearing surface on the washer being axially opposed to each other;
  - c) the annular surface on the nut and the bearing surface on the washer are undulating in shape; and
  - 25 d) a clamping surface on the washer.
6. A fastener assembly according to claim 5, further comprising a clamping surface on the washer having a plurality of protrusions.
- 30 7. A fastener assembly according to claim 5, wherein the bearing surface and annular surface are undulating in shape and provided with a plurality of

plateaus, faces, and valleys.

8. A fastener assembly according to claim 5, further comprising:

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- a) the bearing surface and annular surface having a plurality of plateaus, faces, and valleys; and
  - b) a height that is dimensioned according the distance between the plateaus and the valleys and according to a clearance between threads on the nut and threads on a stud.

10 9. A fastener assembly according to claim 5, further comprising:

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- a) the bearing surface and annular surface having a plurality of plateaus, faces, and valleys; and
  - b) a height that is dimensioned according the distance between the plateaus and the valleys, wherein the height is slightly greater than a clearance between threads on the nut and threads on a stud.

10. A fastener assembly according to claim 5, further comprising:

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- a) the bearing surface and annular surface having a plurality of plateaus, faces, and valleys; and
  - b) a height that is dimensioned according the distance between the plateaus and the valleys and according to a number of threads per inch on the nut.

11. A fastener assembly according to claim 5, further comprising:

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- a) the bearing surface and annular surface having a plurality of plateaus, faces, and valleys;
  - b) the plateaus, faces, and valleys providing the bearing surface and annular surface with a number of Vee-shaped undulations; and
  - c) a height that is dimensioned according the distance between the
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- plateaus and the valleys and according to the number of Vee-shaped undulations.

12. A fastener assembly according to claim 5, further comprising:

- a) the bearing surface and annular surface having a plurality of plateaus, faces, and valleys;
- b) the plateaus, faces, and valleys providing the bearing surface and annular surface with a number of Vee-shaped undulations; and
- c) a height that is dimensioned according the distance between the plateaus and the valleys and according to the number of Vee-shaped undulations and a number of threads per inch on the nut.

13. A fastener assembly according to claim 5, further comprising:

- a) the bearing surface and annular surface having a plurality of plateaus, faces, and valleys;
- b) the plateaus, faces, and valleys providing the bearing surface and annular surface with a number of Vee-shaped undulations; and
- c) a height that is dimensioned according the distance between the plateaus and the valleys and that is proportional to a product of the number of Vee shaped undulations and a number of threads per inch on the nut.

14. A fastener assembly, comprising:

- a) a nut configured to retain a cap;
- b) a washer having a bearing surface;
- c) the nut and the washer being rotatable relative to each other about common axis;
- d) the nut having an annular surface axially opposed to the bearing surface; and
- e) the annular surface and the bearing surface are undulating in shape.

15. A locking fastener assembly according to claim 14, further comprising a

clamping surface on the washer.

16. A locking fastener assembly according to claim 14, further comprising a clamping surface on the washer having a plurality of protrusions.

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17. A locking fastener assembly according to claim 14, wherein the nut is configured to retain a cap via an interference fit.

18. A locking fastener assembly according to claim 14, further comprising a cap, wherein the cap is retained on the nut so that an interference fit is achieved between the cap and the nut.

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19. A fastener assembly, comprising:

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- a) a nut having a torque transmitter shaped to transmit torque and a retaining surface;
- b) the retaining surface is configured to retain the cap;
- c) the cap is dimensioned according to the nut, wherein the cap is retained on the nut so that an interference fit is achieved between the cap and retaining surface.

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20. A fastener assembly, comprising:

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- a) a nut having a torque transmitter and a retaining surface;
- b) the retaining surface is configured to retain a cap; and
- c) the cap is shaped according to the nut, wherein the cap is retained on the nut so that an interference fit is achieved between the nut and the cap.

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21. A fastener assembly according to claim 20, wherein the retaining surface is provided with a frictional surface.

22. A fastener assembly according to claim 20, wherein the retaining surface

is provided with a frictional surface having an increased frictional coefficient.

23. A fastener assembly according to claim 20, wherein the retaining surface is provided with a plurality of notches at an angle.

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24. A fastener assembly according to claim 20, wherein the retaining surface is provided with a frictional surface that is provided with a plurality of notches at an angle between 30° and 60° with respect to an axis of the nut.

10 25. A fastener assembly according to claim 20, wherein the retaining surface is provided with a frictional surface having a plurality of notches at an angle of 45° with respect to an axis of the nut.

15 26. A fastener assembly according to claim 20, wherein an inner surface of the cap is shaped so that an interference fit is achieved with the retaining surface.

27. A fastener assembly, comprising:

- 20 a) a washer having a bearing surface;
- b) a nut having a torque transmitter shaped to transmit torque, a retaining surface configured to retain a cap, and an annular surface that is opposed to the bearing surface on the washer;
- c) the washer and nut are assembled together whereby the washer and nut rotate with respect to each other; and
- 25 d) the cap is shaped so that a socket wrench applies torque to the torque transmitter rather than the cap and so that an interference fit can be achieved with the retaining surface.

28. A fastener assembly according to claim 27, wherein the annular surface and the bearing surface are undulating in shape.

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29 A fastener assembly according to claim 27, wherein the annular surface and the bearing surface are provided with a Vee shaped profile.

30. A fastener assembly, comprising:

- 5 a) a washer having a bearing surface;
- b) a nut having a torque transmitter shaped to transmit torque, a retaining surface configured to retain a cap, and an annular surface that is opposed to the bearing surface on the washer;
- 10 c) wherein the washer and nut are assembled together whereby the washer and nut rotate with respect to each other; and
- d) wherein the cap is retained on the nut so that an interference fit is achieved between the cap and the retaining surface.

31. A fastener assembly according to claim 30, wherein the annular surface and bearing surface are undulating in shape.

32. A fastener assembly according to claim 30, wherein the annular surface and the bearing surface include a Vee shaped profile.

20 33. A fastener assembly, comprising:

- a) a washer having a bearing surface;
- b) a nut having a torque transmitter shaped to transmit torque, and an annular surface that is opposed to the bearing surface on the washer;
- 25 c) the washer and the nut being assembled together whereby the washer and nut rotate with respect to each other; and
- d) wherein the annular surface and the bearing surface are provided with a number of Vee shaped undulations.

30 34. A fastener assembly according to claim 33, further comprising a clamping surface configured to prevent the washer from rotating.

35. A fastener assembly according to claim 33, wherein the washer is provided with a clamping surface having a plurality of protrusions.

5 36. A fastener assembly according to claim 33, wherein:

a) the nut is provided with a predetermined number of threads per inch;

b) the Vee shaped undulations of the annular surface comprise a plurality of plateaus, faces, and valleys; and

10 c) wherein a height of the plateaus is dimensioned according to the threads on the nut.

37. A fastener assembly according to claim 33, wherein:

15 a) the nut is provided with a predetermined number of threads per inch;

b) the Vee shaped undulations of the annular surface comprise a plurality of plateaus, faces, and valleys;

c) wherein a depth of the valleys is dimensioned according to the threads on the nut

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38. A fastener assembly according to claim 33, wherein:

a) the nut is provided with a predetermined number of threads per inch;

25 b) the Vee shaped undulations of the annular surface comprise a plurality of plateaus, faces, and valleys; and

c) wherein a height of the plateaus is dimensioned according to the number of undulations on the annular surface

39. A fastener assembly according to claim 33, wherein:

30 a) the nut is provided with a predetermined number of threads per inch;

- b) the Vee shaped undulations of the annular surface comprise a plurality of plateaus, faces, and valleys; and
- c) wherein a depth of the valleys is dimensioned according to the number of undulations on the annular surface.

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40. A fastener assembly according to claim 33, wherein:

- a) the nut is provided with a predetermined number of threads per inch;
- b) the Vee shaped undulations of the bearing surface comprise a plurality of plateaus, faces, and valleys; and
- c) wherein a height of the plateaus is dimensioned according to the threads on the nut.

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41. A fastener assembly according to claim 33, wherein:

- a) the nut is provided with a predetermined number of threads per inch;
- b) the Vee shaped undulations of the bearing surface comprise a plurality of plateaus, faces, and valleys;
- c) wherein a depth of the valleys is dimensioned according to the threads on the nut

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42. A fastener assembly according to claim 33, wherein:

- a) the nut is provided with a predetermined number of threads per inch;
- b) the Vee shaped undulations of the bearing surface comprise a plurality of plateaus, faces, and valleys; and
- c) wherein a height of the plateaus is dimensioned according to the number of undulations on the bearing surface

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43. A fastener assembly according to claim 33, wherein:

- a) the nut is provided with a predetermined number of threads per

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inch;

- b) the Vee shaped undulations of the bearing surface comprise a plurality of plateaus, faces, and valleys; and
- c) wherein a depth of the valleys is dimensioned according to the number of undulations on the bearing surface.

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44. A fastener assembly according to claim 33, wherein:

- a) the nut is provided with a predetermined number of threads per inch;
- b) the Vee shaped undulations of the annular surface comprise a plurality of plateaus, faces, and valleys; and
- c) wherein a height of the plateaus is proportional to the product of the number of threads per inch on the nut and the number of Vee shaped undulations on the annular surface.

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45. A fastener assembly according to claim 33, wherein:

- a) the nut is provided with a predetermined number of threads per inch;
- b) the Vee shaped undulations of the annular surface comprise a plurality of plateaus, faces, and valleys; and
- c) wherein a depth of the valleys is proportional to the product of the number of threads per inch on the nut and the number of Vee shaped undulations on the annular surface.

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46. A fastener assembly according to claim 33, wherein:

- a) the nut is provided with a predetermined number of threads per inch;
- b) the Vee shaped undulations of the bearing surface comprise a plurality of plateaus, faces, and valleys; and
- c) wherein a height of the plateaus is proportional to the product of the number of threads per inch on the nut and the number of Vee

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shaped undulations on the bearing surface.

47. A fastener assembly according to claim 33, wherein:

- 5       a) the nut is provided with a predetermined number of threads per inch;
- b) the Vee shaped undulations of the bearing surface comprise a plurality of plateaus, faces, and valleys; and
- 10      c) wherein a depth of the valleys is proportional to the product of the number of threads per inch on the nut and the number of Vee shaped undulations on the bearing surface.